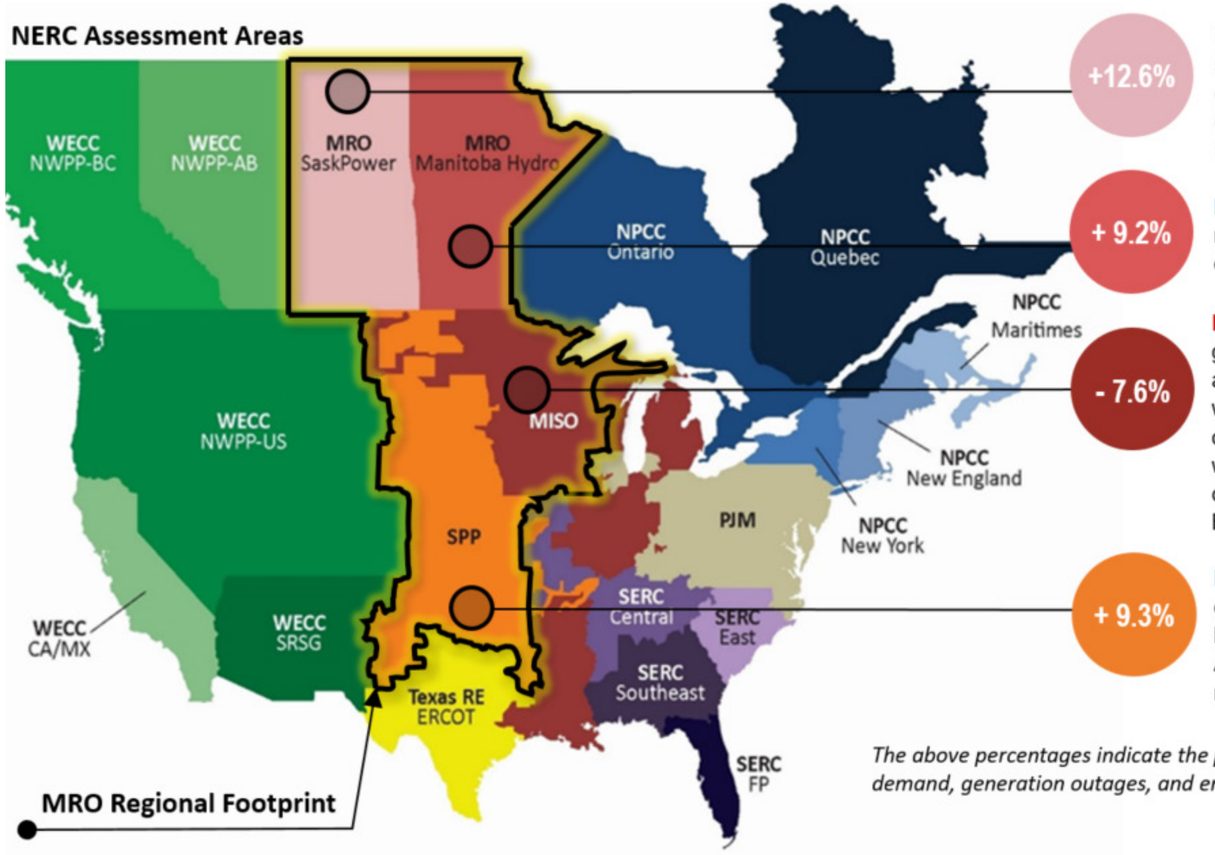
MIDWEST RELIABILITY ORGANIZATION

2022 Regional Winter Assessment

A comprehenasive evaluation of resource and transmission system adequacy, emerging trends, and projected reliability concerns for the bulk power system in MRO's regional footprint for the upcoming winter season.

Key Findings



+12.6%

LOW RISK. While SaskPower's reserve margin reflects sufficient capacity, there is potential risk of generation loss due to forced outages during extreme weather events that could result in operating mitigations and/or Energy Emergency Alerts.

+ 9.2%

LOW RISK. Sufficient resources exist in Manitoba Hydro to meet reserve margin requirements under normal and extreme winter peak demand.

- 7.6%

HIGH RISK. MISO experienced a 4.2 GW reduction in generation this year from coal and nuclear plant retirements and has insufficient capacity to cover anticipated normal winter peak demand with typical maintenance and forced outages. This will need to be carefully managed. Extreme winter peak load coupled with forced generation outages could result in operating mitigations and/or Energy Emergency Alerts.

+ 9.3%

LOW RISK. While SPP's reserve margin reflects excess capacity, there is still potential risk of capacity shortfall based on past performance during extreme weather events. Additionally, potential coal delivery issues in MISO and SPP requires monitoring this winter season.

*The above percentages indicate the **projected reserve margin** with electricity demand, generation outages, and energy derates under extreme conditions.*

Reliability Trends

- Generation forced outage rates are increasing as a result of component fatigue and an aging fleet, due in part to higher penetrations of intermittent resources that cause conventional generation to cycle more.
- As dependence on intermittent resources increases, there will be a greater need for fast responding dispatchable resources capable of following large unexpected changes in intermittent resource output.

Recommendations

Industry:

- Review NERC level 2 alert related to cold weather preparedness and participate in MRO's voluntary Generator Winterization Program.
- Maintain situational awareness of unplanned generation outages and low wind forecasts and employ operating mitigations when needed during extreme weather conditions.
- Assess and develop new and better methods to evaluate supply adequacy, especially when a significant amount of generation capacity has an intermittent fuel source that is difficult to forecast.

State and Provincial Regulatory Agencies:

- Preserve critical generation resources at risk of retirement ahead of the winter season to maintain reliability.
- Understand requests for environmental and transportation waivers that place fuel at risk.
- Support electric load and natural gas distribution company conservations and public appeals during emergencies.

More information on these risks and mitigation recommendations can be found in the full report here: www.mro.net